

Mr. Michael T. Davis
Pre-Calculus

2.1 Extensive Polynomial Factoring
PRACTICE QUIZ
November 28, 2016

Name:

Solutions

Factoring Trinomials with $a \neq 1$

1. Factor $5y^2 + 12y + 7 = (5y + 7)(y + 1)$

2. Factor $14t^2 + 11t - 15 = (2t + 3)(7t - 5)$

Factoring Binomials that are Difference of Squares

3. Factor $m^2 - 36 = (m - 6)(m + 6)$

4. Factor $9k^2 - 49 = (3k - 7)(3k + 7)$

Factoring Trinomials that are Binomials Squared

5. Factor $p^2 - 20p + 100 = (p - 10)(p - 10) = (p - 10)^2$

6. Factor $4w^2 + 20w + 25 = (2w + 5)(2w + 5) = (2w + 5)^2$

Factoring Binomials that are a Difference of Cubes or a Sum of Cubes

7. Factor $m^3 - 64 = (m - 4)(m^2 + 4m + 16)$

8. Factor $8k^3 + 27 = (2k + 3)(4k^2 - 6k + 9)$

Factoring Binomials with a Common Factor

9. Factor $8x^2 + 24x = 8x(x + 3)$

10. Factor $5m^3 - 45m = 5m(m^2 - 9) = 5m(m - 3)(m + 3)$

Factoring Trinomials with a Common Factor

11. Factor $2x^2 + 10x + 12 = 2(x^2 + 5x + 6) = 2(x + 2)(x + 3)$

12. Factor $3y^3 + 6y^2 - 45y = 3y(y^2 + 2y - 15) = 3y(y + 5)(y - 3)$

Factoring Higher Degree Polynomials by Grouping

$$\begin{aligned} 13. \text{ Factor } x^3 + 5x^2 + 4x + 20 &= x^2(x+5) + 4(x+5) \\ &= (x+5)(x^2+4) \end{aligned}$$

$$\begin{aligned} 14. \text{ Factor } k^3 - 2k^2 - 16k + 32 &= k^2(k-2) - 16(k-2) \\ &= (k-2)(k^2-16) \\ &= (k-2)(k-4)(k+4) \end{aligned}$$

Factoring Higher Degree Polynomials with a "Quadratic Form"

$$15. \text{ Factor } x^4 + 9x^2 + 14 = (x^2+2)(x^2+7)$$

$$\begin{aligned} 16. \text{ Factor } z^4 - 13z^2 + 36 &= (z^2-4)(z^2-9) \\ &= (z-2)(z+2)(z-3)(z+3) \end{aligned}$$